

Kefer C. Rourke

Software Developer

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in keferrouke

📍 Kitchener, ON

Education

Honours Bachelor of Computing (Co-op)

Sep. 2016 – Present 

University of Guelph

- Major in Computer Science, minor in Mathematics (CGPA: 4.0)
- College of Engineering and Physical Sciences valedictorian for 2021 graduating class
- Named to the College of Engineering and Physical Sciences Society of Excellence
- Awarded paid research assistantships with School of Computer Science for 5/8 academic semesters

Scholarships & Grants

Successful Research Grants

Nov. 2018 **Mitacs Research Grant (\$2.13 million CAD)**

University of Guelph

Co-authored and edited sections of successful grant application to support advanced development of the RightMesh mobile ad-hoc network protocol and platform. \$1.1M of this grant funding was provided by Left Inc., while the remaining \$1.03M of funding was provided by Mitacs.

Individual Scholarships and Grants

Oct. 2018 **Michele and Maria Vannelli Scholarship (\$1000 CAD)**

University of Guelph

Awarded by the Dean of the College of Physical and Engineering Sciences for academic excellence and community leadership.

Jul. 2018 **Major League Hacking Ethical Tech Award (\$10 000 USD)**

Omidyar Network

Awarded for authoring a series of essays on the subject of technology and society. Funding used to attend the *35th annual Chaos Computing Congress* in Leipzig, Germany.

Nov. 2017 **Jay Majithia Scholarship (\$1000 CAD)**

University of Guelph

Awarded for contributions to departmental research in the School of Computer Science.

Sep. 2017 **Travel Grant (approx. \$850 CAD)**

University of Guelph

Awarded travel grant to attend the 2017 PyCon Canada conference in Montréal, QC.

May 2017 **OCE Youth Entrepreneurial Grant (approx. \$1000 CAD)**

Ontario Centres for Excellence

Awarded funding to exhibit at the 2017 OCE Discovery business and technology conference in Toronto, ON.

Sep. 2016 **University of Guelph Entrance Scholarship (\$3000 CAD)**

University of Guelph

Awarded upon acceptance to the University of Guelph for attaining greater than a 90% admission average.

Nominations

- Apr. 2019 **Emmanuel and Kalliope Salamalekis Scholarship** University of Guelph
Nominated by Dr. Daniel Gillis for demonstrating academic excellence and community leadership.
- Apr. 2019 **Michele and Maria Vannelli Scholarship** University of Guelph
Nominated by Dr. Daniel Gillis for demonstrating academic excellence and community leadership.
- May. 2018 **Emmanuel and Kalliope Salamalekis Scholarship** University of Guelph
Nominated by Dr. Daniel Gillis for demonstrating academic excellence and community leadership.

★ Honours & Awards

Received Honours and Awards

- 2021 **E.B. MacNaughton Convocation Prize (\$1000 CAD)** University of Guelph
Awarded by the College of Engineering and Physical Sciences to the student who has shown the most excellent overall academic achievements and outstanding contributions to the campus and community.
- 2020 **Outstanding Undergraduate Research Awards (Hon. Mention)** Computing Research Association
This award program recognizes undergraduate students in North American colleges and universities who show outstanding research potential in an area of computing research.
<https://cra.org/about/awards/outstanding-undergraduate-researcher-award/#2020>.
- Mar. 2019 **3rd Place Trophy – Relay Programming** CS Games 2019
Scored third place out of approx. 50 teams in the team relay programming competition at CS Games 2019 in Montréal, QC.
- Jan. 2019 **Co-op Student of the Year Award (B. Computing) (\$1000 CAD)** University of Guelph
Awarded by the University of Guelph in recognition of outstanding workplace performance, academic achievement, innovation, and involvement within the community. Nominated by Left Inc.
- 2016–2020 **Dean's List: College of Physical and Engineering Sciences** University of Guelph
Achieved greater than 80% semesterly averages in all full-time academic semesters.

Nominations

- May. 2021 **W.C. Winegard Medal** University of Guelph
Highest convocation honour awarded to a graduating student. Chosen as the sole nominee from the College of Engineering and Physical Sciences.
- Apr. 2019 **CEPS-SC Student Leadership Award** University of Guelph
Nominated by Dr. Daniel Gillis for demonstrating excellent student leadership and research skills.
- Jan. 2019 **EWO Co-op Student of the Year Award** Education at Work Ontario
Nominated as the sole candidate from the University of Guelph in recognition of outstanding workplace performance, academic achievement, innovation, and involvement within the community.

- Jan. 2019 **CEWIL Co-op Student of the Year Award** CEWIL Canada
Nominated as the sole candidate from the University of Guelph in recognition of outstanding workplace performance, academic achievement, innovation, and involvement within the community.
- May. 2018 **CEPS-SC Student Leadership Award** University of Guelph
Nominated by Dr. Daniel Gillis for demonstrating excellent student leadership and research skills.

Presentations & Publications

Innovations & Business Pitches

- May 2017 **Ontario Centres for Excellence: Discovery Business Conference** Toronto, ON
Exhibited Tokumei Co. (our start-up) to investors over the course of the three day conference. Attendance was funded via a grant as a youth entrepreneur. *Farwell, K. & Rourke, K.*
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Invited keynotes and workshops

- Aug. 2018 **2018 Indigenous Mapping Workshop (IMW) Keynote** Montréal, QC
Using Mesh Technology to Support Climate Change Monitoring. **(Keynote speaker).** *Gillis, D., Rourke, K. & Shiwak, I.* <https://krouke.org/projects/pres/2018imw>.
- Aug. 2018 **2018 Indigenous Mapping Workshop (IMW) Sessions** Montréal, QC
Ideation Process: Identifying Problems RightMesh Can Solve I & II. **(Leader for two-part workshop).** *Gillis D., Rourke, K. & Durish, N.*
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Conference Presentations

- May 2019 **Labrador Research Forum** Happy Valley-Goose Bay, NL
Supporting Community-Based Monitoring With Technology In The Circumpolar North. **(Co-author).** *Gillis, D., Durish, N., Rourke, K., Asch, M., Knarr, J., Kipp, A., Sawatzky, A., Middleton, J., Borish, D., Bell, I., Cunsolo, A., Shiwak, I., Flowers, C., Wood, M. & Harper, S.*
Bridging the Digital Divide in the Circumpolar North. **(Co-author).** *Durish, N., Gillis, D., Seymour, F., Rourke, K., Asch, M., Raturi, S., Hughes, B., Flowers, C., Shiwak, I., Wood, M. & Ernst, J.*
- Mar. 2019 **Western Student Research Conference** London, ON
Bridging the Digital Divide & Improving Community-Based Monitoring Programs in the Circumpolar North. **(Speaker).** *Asch, M., Rourke, K., Durish, N., Seymour, F., Flowers, C., Wood, M., Ernst, J., Gillis, D., et al.* <https://krouke.org/projects/pres/2019wsr>.
- Oct. 2018 **People, Places, and Public Engagement** St. John's, NL
Bridging the Digital Divide & Improving Community-Based Monitoring Programs in the Circumpolar North. **(Co-author).** *Durish, N., Seymour, F., Rourke, K., Raturi, S., Hughes, B., Harper, S., Cunsolo, A., Flowers, C., Shiwak, I., Wood, M., Gillis, D., Ernst, J. & Rigolet Inuit Community Government.*

- Aug. 2018 **17th International Congress on Circumpolar Health** Copenhagen, Denmark
The eNuk Program: Participatory, community-led environment and health surveillance with Inuit in Rigolet, Nunatsiavut, Canada. **(Co-author)**. *Cunsolo, A., Harper, S., Gillis, D., Shiwak, I., Flowers, C., Sawatzky A., Kipp A., Wood M., The Rigolet Inuit Community, Durish N., Cook O. & Rourke K.*
Bridging the Digital Divide in the Circumpolar North with Wireless Mobile Mesh Networks: a community-led participatory project in Rigolet, Nunatsiavut. **(Co-author)**. *Gillis, D., Durish, N., Seymour, F., Rourke, K., Cook, O., Shiwak I., Flowers C., *Sawatzky A., Kipp A., Wood M., The Rigolet Inuit Community Government, Harper S., Cunsolo A. & Ernst J.*
- Jan. 2018 **StarCon – Software Engineering Conference** Waterloo, ON
Gloom, Doom, and the Internet, a talk about internet privacy, security, and data ownership. **(Speaker)**. *Rourke, K.* <https://krouke.org/projects/pres/starcon18>.
- Aug. 2017 **Graduate Student University Teaching Conference** Guelph, ON
Teaching with Tech: How to Upgrade Your In-class Teaching. **(Speaker)**. *Fraser, J. & Rourke, K.*
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Poster Presentations

- Aug. 2019 **CEPS Undergraduate Poster Session (CUPS)** Guelph, ON
Developing Tools to Learn Mobile Development. **(Co-author)**. *Mustafa, A., Durish, N., Asch, M., Rourke, K., Samuels, J. & Gillis D.*
eNuk: The Health And Environment Monitoring System. **(Co-author)**. *Varshney, A., Durish, N., Asch, M., Rourke, K., Samuels, J. & Gillis D.*
- Dec. 2018 **ArcticNet** Ottawa, ON
Bridging the Digital Divide to Support Community-based Monitoring in the Circumpolar North. **(Co-author)**. *Durish, N., Gillis, D., Seymour, F., Rourke, K., Asch, M., Raturi, S., Hughes, B., Flowers, C., Shiwak, I., Wood, M. & Ernst, J.*
- Aug. 2017 **CPES Undergraduate Poster Session (CUPS)** Guelph, ON
Investigating the impact of automated feedback in e-learning environments. **(Presenter)**. *Rourke, K., Fraser, J., McCuiag J. & Gillis, D.*
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Other Presentations

- Aug. 2020 **Mozilla Summer Lightning Talks** Virtual Event
Rethinking Firefox I/O: The 2020 Edition. **(Presenter)**. *Rourke, K.* <https://krouke.org/projects/pres/2020moz>.
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Essays

- June 2018 **Major League Hacking Ethical Tech Initiative** Ann Arbor, MI
Authored an award winning series of untitled short essays on ethics in technology. **(Primary author)**. *Rourke, K. & Parent, A.*
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Articles in Proceedings

Bridging the Digital Divide in the Circumpolar North. *Labrador Research Forum* (2019). Durish, N., Gillis, D., Seymour, F., Rourke, K., Asch, M., S. Raturi, B. Hughes, C. Flowers, I. Shiwak, M. Wood, & Ernst, J..

Supporting Community-Based Monitoring With Technology In The Circumpolar North. *Labrador Research Forum* (2019). Gillis, D., Durish, N., Rourke, K., Asch, M., Knarr, J., A. Kipp, A. Sawatzky, J. Middleton, D. Borish, I. Bell, A. Cunsolo, I. Shiwak, C. Flowers, M. Wood, & Harper, S.L..

eNuk: Using Mesh Technology to Support Climate Change Monitoring [Invited keynote]. *Indigenous Mapping Workshop* (2018). Gillis, D., Rourke, K. & Shiwak, I..

Articles in Progress

IFS: Design and preliminary results of IFS a student-centred educational platform. (*working title, 5 pages*) (2020). Fraser, J., McCuaig, J., Gillis, D., Rourke, K..

A Standard Protocol for Describing MANET Related Models, Simulations and Findings. *International Conference on Ad-Hoc Networks and Wireless (targeted)* (2020). Savic, I., Asch, M., Houlding, P., Fraeys, J., Safari, F., Rourke, K., Ernst, J., & Gillis, D..

Projects

eNuk – Mobile Health and Environmental Monitoring

Jan. 2018 – Dec. 2019 

Community of Rigolet, Nunatsiavut

enuk.eco/ 

eNuk is a peer-to-peer enabled health and environmental monitoring application for the web and Android devices, built for and by the Inuit community of Rigolet, Nunatsiavut in partnership with the University of Guelph, Labrador Institute of Memorial University, and the Nunatsiavut Government.

Gillis, D., Rourke, K. Asch, M., Rigolet Inuit Community Government, et al.

Associated publications and presentations: 5

Tokumei – Anonymous Microblogging

Nov. 2015 – Jan. 2019 

Ontario Centres for Excellence

tokumei.co/ 

Tokumei is a free, self-hostable, alternative media platform featuring strong anonymity, easily discoverable content, and an intuitive user experience. Fighting the trend of mass data collection, Tokumei provides a software platform for hosting public and private online communities without requiring any personal information from its users, while striving to ensure that information stays protected. Tokumei is featured in the University of Utah Social Media Alternatives Project, and has received successful funding for business growth.

Rourke, K., Farwell, K.

Associated presentation and pitches: 2

Immediate Feedback System

Jan. 2017 – Dec. 2017 

University of Guelph School of Computer Science

Guelph, ON 

The Immediate Feed Back System (IFS) is a web application for student programming and essay writing assessment. Feedback is generated based on the output of a set of configurable tools which students can enable or disable as they choose.

McCuaig, J., Fraser, J., Rourke, K., et al.

Associated publications and presentations: 2

Entrepreneurial Ventures

Founder & Lead Developer/Designer

Nov. 2015 – Jan. 2019 

Tokumei Co. – Anonymous Microblogging

tokumei.co/ 

- Attracted international interest for the platform from clients and other software developers in 4 countries
- Designed and implemented scalable ranking algorithms for trending posts and tags
- Made critical user experience and design decisions to create a simple, polished product
- Worked with the YouLaunch business accelerator in Sault Ste. Marie, ON to grow the business
- Awarded a youth entrepreneurial grant to attend the Ontario Centres for Excellence: Discovery business conference to pitch our business and demonstrate our product on the showroom floor

Professional Experience

Software Developer

May 2021 – Present 

Square Inc. – Cash App

Toronto, ON 

Software Developer Co-op

May 2020 – Aug. 2020 

Mozilla Inc. – Firefox

Toronto, ON 

- Rewrote **Firefox** File I/O subsystem in C++ in an effort to reduce cache contention and memory usage, while improving start-up performance
- Wrote comprehensive migration guide for the new File API
- Fixed bugs related to site-isolation in effort to mitigate Spectre-like vulnerabilities in the browser runtime

Software Developer Co-op

Jan. 2020 – May 2020 

Square Inc. – Cash App

Toronto, ON 

- Designed and built a high-throughput internal load testing service
- Prevented critical production errors
- Collaborated with product teams to integrate with their services

Software Developer Co-op

May 2019 – Aug. 2019 

Square Inc. – Cash App


Kitchener, ON 

- Led design and development of a software security tool to defend against dependency supply chain attacks on the JVM
- Liaised with external software developers interested in research and development of this novel security tool
- Added new features and service coordination logic to the open-source **misk** microservice web framework

Lead API Developer & Research Assistant

Jan. 2019 – Dec. 2019 

University of Guelph School of Computer Science

Guelph, ON 

- Led development, integration, and testing of the web API for the eNuk environmental and health monitoring application
- Trained new research assistants to accelerate their understanding and contribution towards project goals
- Led weekly meetings to coordinate software development, liaised with external client development team

Software Developer Co-op

Apr. 2018 – Dec. 2018 

Left Inc. — RightMesh

Metro Vancouver, BC 

- Assisted in creation of successful **\$2.13M Mitacs Research Grant** application
 - Awarded 2018 **Co-op Student of the Year** at the University of Guelph
 - Led refactoring of codebase into platform-independent modules, to improve maintainability and developer velocity
 - Identified problems and proposed solutions for software security and reliability, particularly focused on trust models in decentralized systems
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Lead Web Developer & Research Assistant

Jan. 2018 – Apr. 2018 

University of Guelph School of Computer Science


Guelph, ON 

- Designed and developed secure, modular web framework with NodeJS using the model-view-controller pattern
 - Investigated capabilities and interoperability of mobile mesh networking with the web application server
 - Led and participated in regular design meetings, ensuring organization and clear communication during development
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Research Assistant & Web Developer

Jan. 2017 – Dec. 2017 

University of Guelph School of Computer Science


Guelph, ON 

- Developed full-stack e-learning software platform for programming and essay writing using NodeJS and Python as part of a PhD research project
 - Wrote comprehensive documentation and robust scripts to simplify installation on Debian servers
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Application Engineering Intern

Jul. 2016 – Sep. 2016 

Xylem Inc.

Guelph, ON 

- Corrected legacy databases to eliminate thousands of data inconsistencies, measurably improving business accuracy and efficiency
 - Created guidelines for improved process efficiency through the use of automation technologies
 - Created documentation for specialized business software to simplify technical training
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Volunteer Work

B. Comp. Fall Internship Panel Moderator


Guelph, ON 

School of Computer Science

Nov. 2020 

Organized and moderated a panel of eight (8) co-op students, surveying the state of remote work for software developers in 2020, furthering the understanding of roles of women in tech, prompting for career advice, etc. This event was recorded live and published on YouTube to assist more than 100 computing students.

Pro-bono External Code Reviewer

Guelph, ON 

School of Computer Science

Jul. 2020 

Volunteered time to perform a joint-external review of the software components of a student research project. This review included a design/architectural review, a code review, and a security audit.

- Virtual Spring Academic Open House – Student Representative** Guelph, ON 📅
School of Computer Science May 2020 📍
Moderated and answered questions from prospective Guelph Computing students.
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- Hour of Code** Maple Ridge, BC 📅
Left Inc. Dec. 2018 📍
Assisted in running introductory programming activities for small groups of elementary school aged children to encourage creative and critical thinking and development of technical literacy.
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- Shoreline Cleanup** Port Moody, BC 📅
Left Inc. Jul. 2018 📍
Collected and disposed of waste from the shoreline of Port Moody with a volunteer group from Left Inc.
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- Trick or Eat – Web Administrator** Guelph, ON 📅
CSA Meal Exchange Chapter Oct. 2017 📍
Organized KMZ (Google Earth) route/zone data for Guelph Trick or Eat campaign, and administrated the web interface at <https://guelphtrickoreat.ca>. This annual event allows University of Guelph students to set national records, raising the equivalent of \$100 000 of food in a single evening.
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- Volunteer Note-taker** Guelph, ON 📅
Student Accessibility Services 2016–2017 📍
Provided high-quality typeset notes to SAS for CIS*1500 and GERM*1100 courses.
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- Non-profit Hardware Refurbisher** Kitchener, ON 📅
Computer Recycling – The Working Centre Aug. 2014–Aug. 2016 📍
Identified and solved hardware problems using software diagnosis tools in an effort to reduce e-waste and recover usable parts from discarded computers.
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- Pro-bono Technical Support Specialist** Kitchener, ON 📅
Software Freedom Day Sep. 2014 📍
Assisted with the installation and configuration of operating systems and productivity software, teaching these skills to event attendees in the process.













Extracurricular Activities

- 2020–2021 **President – Society of Computing and Information Sciences** University of Guelph
Represented the student body to the School of Computer Science and college governments, and sat on School of Computer Science council and Bachelor of Computing Program committee as student representative. Successfully ran five (5) virtual Orientation Week events with the SOCIS executive body to welcome new students to the School of Computer Science. Oversaw the operations of affiliate Computer Science Student Organizations: *Guelph Women in Computer Science (GWiCS)*, *The Guelph Coding Community (GCC)*, and *The Google Developer Student Club (DSC)*. Enrolled SOCIS as a founding member of the Canadian Computing Councils (*C³*) inter-collegiate student organization which aims to support student-driven initiatives and to develop a professional network for Canadian computing students across institutions.
- 2018–2021 **Administrator – GryphSlack** <https://gryph.slack.com>
Performed administrative and moderation tasks for an online community of over 1300 School of Computer Science undergraduate and graduate students, alumni, and community/industry partners.
- 2019–2020 **President – Guelph Coding Community** University of Guelph
Incorporated the GCC as an independent student organization to increase funding and flexibility. Coordinated and organized >15 weekly student-run technology seminar sessions and demonstrations. Liaised with industry leaders to coordinate guest presentations and workshops to enabled extra-curricular learning and networking opportunities for fellow students. Raised approx. \$4000 in funding to send 22 students to the 2020 CS Games collegiate programming competition in Montréal, Quebec and organized logistics for this event. Ran two (2) training workshops to prepare students for CS Games competitions. Reached approx. 200 students through these events.
- 2019–2020 **Secretary – Society of Computing and Information Sciences** University of Guelph
Prepared meeting minutes, managed SOCIS social media accounts, and advertised events to engage with the broader student community.
- 2018–2019 **Vice President External – Society of Computing and Information Sciences** University of Guelph
Represented the student body to external organizations and college government. Coordinated logistics to send 20 students to the annual CS Games collegiate programming competition in Montréal, QC.
- 2018 **Lead Organizer – Guelph Coding Community** University of Guelph
Coordinated and organized bi-weekly student-run technology seminar sessions and demonstrations through the winter and fall semesters. Assisted with logistics to send 10 students to the annual CS Games collegiate programming competition in Quebec City, QC.

Technical Skills Summary

- Proficient in object-oriented, asynchronous, concurrent, web and systems programming using Kotlin, C, C++, Python 3, JavaScript, Java, Golang, and Bash shell
- Experienced in the development, integration, deployment, and use of REST APIs, microservices, continuous integration, relational databases, software containers (Docker), version control, software build systems, and Linux-based web application servers
- Experienced with the agile, scrum, test-driven development, and modular design methodologies of software development

Media Links

Mar. 2019		<u>Celebrating Outstanding U of G Co-op Students</u>	UoG News
Jan. 2019		<u>2018 Co-op of the Year Awarded to Keefer Rourke</u>	RightMesh Blog
Jan. 2019		<u>Computer Science Student Keefer Rourke Wins Co-op Student of the Year</u>	UoG Computing
Nov. 2018		<u>School of Computer Science and Left ... \$2.13M Mitacs Research Project ...</u>	UoG Computing
Aug. 2018		<u>Meshing with Maps: Empowering Indigenous Communities</u>	RightMesh Blog
Aug. 2018		<u>Announcing the Winner of the MLH Ethical Tech Initiative</u>	MLH News
July 2018		<u>SoCS Undergrads Win Ethical Tech Initiative</u>	UoG Computing
July 2018		<u>Hacking a More Ethical Future</u>	Omidyar Network
2018-2019		<u>Guelph Computing: Meet Our Students</u>	UoG Computing
Sep. 2017		<u>Student Success at Hack the North</u>	UoG Computing
May 2017		<u>Three clients debut at Canada's leading technology and innovation event</u>	YouLaunch
Feb. 2016		<u>People need a place to share and debate things without fear of prosecution</u>	S-MAP Project